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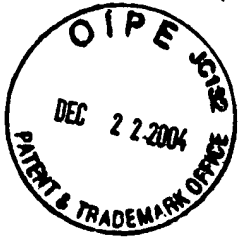
Application Number	09/439,217
Filing Date	November 12, 1999
First Named Inventor	Chistopher Burke BARROSO
Group Art Unit	2686
Examiner Name	Joy K. Contee

Total Number of Pages in This Submission	19	**Attorney Docket Number**	29250-002080/US

ENCLOSURES *(check all that apply)*

☒ Fee Transmittal Form

  ☒ Fee Attached

☐ Amendment / Response

  ☐ After Final

  ☐ Affidavits/declaration(s)

☐ Extension of Time Request

☐ Express Abandonment Request

☐ Information Disclosure Statement

☐ Certified Copy of Priority Document(s)

☐ Response to Missing Parts/ Incomplete Application

  ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53

☐ Assignment Papers *(for an Application)*

☐ Drawing(s)

☐ Licensing-related Papers

☐ Petition

☐ Petition to Convert to a Provisional Application

☐ Power of Attorney, Revocation Change of Correspondence Address

☐ Terminal Disclaimer

☐ Request for Refund

☐ CD, Number of CD(s) _____

☐ After Allowance Communication to Group

☐ Appeal Communication to Board of Appeals and Interferences

☒ Appeal Communication to Group *(Appeal Notice, Brief, Reply Brief)*

☐ Proprietary Information

☐ Status Letter

☐ Other Enclosure(s) *(please identify below)*:

Remarks

MAIL STOP <u>APPEAL BRIEF - PATENTS</u>

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm *or* Individual name	Harness, Dickey & Pierce, P.L.C.	Attorney Name Gary D. Yacura	Reg. No. 35,416
Signature			
Date	December 22, 2004		

IN THE U.S. PATENT AND TRADEMARK OFFICE

Appellants: Christopher Burke BARROSO, et al.

Application No.:   09/439,217

Art Unit: 2686

Filed: November 12, 1999

Examiner: Joy K. Contee

For: METHOD OF TIMING CALIBRATION

Attorney Docket No.:   29250-002080/US

APPELLANTS' BRIEF ON APPEAL UNDER 37 C.F.R. §41.37

U.S. Patent and Trademark Office   December 22, 2004
220 20th Street S.
Customer Window, MAIL STOP **APPEAL BRIEF - PATENTS**
Crystal Plaza Two, Lobby, Room 1B03
Arlington, VA 22202

Sir:

In accordance with the provisions of 37 C.F.R. §41.37, Appellants submit the following:

I.   REAL PARTY IN INTEREST:

The real party in interest in this appeal is Lucent Technologies, as evidenced by the assignment recorded at Reel 010695, Frame 0176.

II.   RELATED APPEALS AND INTERFERENCES:

There are no known appeals or interferences that will affect, be directly affected by, or have a bearing on the Board's decision in this Appeal.

III.   STATUS OF CLAIMS:

Claims 1-5, 8, 10 and 12 are pending in the application, with claims 1 and 2 being written in independent form. Appellants canceled claims 6-7, 9 and 11 during prosecution.

Claims 12 would be allowed if rewritten in independent form.

Claims 1, 2 and 4-5 remain finally rejected under 35 U.S.C. § 103 as being unpatentable over Malcolm (USP 5,790,939) in view of Huston (USP 6,266,008). Claim 3 remains finally rejected under 35 U.S.C. § 103 as being unpatentable over Malcolm in view Huston and further in view of Noguchi (USP 4,607,257).[1] Claim 10 remains finally rejected under 35 U.S.C. § 103 as being unpatentable over Malcolm in view Huston and further in view of Abraham (USP 5,510,797).

Claims 1-5, 8 and 10 are being appealed.

IV.   STATUS OF AMENDMENTS:

No amendments were requested subsequent to the non-final rejection in the May 12, 2004 Office Action.

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[1] In the Final Office Action dated April 21, 2004, the rejection of claim 3 is recited as being based on Malcolm in view of Noguchi. The omission of the Huston patent in the art grounds of rejection is undoubtedly a typographical error as claim 3 depends from claim 1, and the Examiner admits on page 3 of this office action that Malcolm does not teach all of the limitations of claim 1. Instead, the Examiner relies on an asserted combination of Malcolm and Huston in rejecting claim 1.

V.   <u>**SUMMARY OF CLAIMED SUBJECT MATTER:**</u>

Fig. 6 depicts a wireless communications or wireless GPS (WAG)

system 60 in accordance with the present invention. WAG 60 comprises at

least one base station 62, a dedicated timing calibration (DTC) unit 66, a

WAG server 68 and at least WAG client 69. Base station 62 has a known

location and provides communication services to WAG clients located

within an associated geographical area or cell. Base station 62 is

connected via a wired or wireless interface 65 and 67 to DTC unit and WAG

server 68. DTC unit 66 is a device for performing time calibration and may

be connected to WAG server 68 via a wired or wireless interface 61. DTC

unit 66 includes an oscillator and a GPS receiver having an antenna

positioned with a clear view of the sky for receiving GPS signals from GPS

satellite 64-k. WAG server 68 includes a GPS receiver having an antenna

installed in a known stationary location with a clear view of the sky. WAG

client 69 includes an oscillator, a GPS receiver and perhaps a mobile-

telephone, and is typically in motion and/or in an unknown location with

or without a clear view of the sky. [2]

DTC unit 66 performs time calibrations between system timing and

GPS timing. To describe how DTC unit 66 performs this time calibration

function, an understanding of system timing and GPS timing is explained

below. System timing refers to the timing used by the wireless

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[2] Page 6, line 26- Page 7, line 4.

communications system to which base station 62 and WAG client 69

belong, whereas GPS timing refers to the timing used by GPS satellites 64.[3]

System timing is used to synchronize base station 62 with other base

stations belonging to a same wireless communications system, and to WAG

client 69 or other mobile-stations belonging to the same wireless

communications system. Base station 62 transmits data over a plurality of

frames to WAG client 69, wherein each frame spans a known time interval

and transmission of each frame is synchronized according to system

timing. FIG. 7 depicts a series of frames 70-n over which data is

transmitted. Each frame 70-n begins and ends transmission at times t_n

and t_{n+1}, wherein the time duration between times t_n and t_{n+1} is T. Frames

70-n are defined by frame boundaries 72-n and 72-n+1. Each frame 70-n

includes synchronization bits 75 for indicating frame boundaries 72-n and

72-n+1. Each frame 70-n includes synchronization bits 74 for indicating

frame boundaries 72-n and/or 72-n+1.[4]

GPS satellites 64-k are synchronized to each other using GPS timing.

GPS timing is embedded into GPS signals and subsequently transmitted to

DTC unit 66, WAG server 68, WAG client 69 and any other devices

equipped with a GPS receiver. Upon receiving a GPS signal, DTC unit 66

derives a GPS time $t_{GPS\text{-}derived}$, and uses its oscillator to generate a GPS pulse

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[3] Page 7, lines 6-10.
[4] Page 7, lines 14-22.

train representing GPS timing, wherein the GPS pulse train is synchronized to the GPS time $t_{GPS\text{-}derived}$.[5]

FIG. 10 depicts how time calibration is performed by DTC unit 66. Upon receiving base station signal 90, DTC unit 66 determines when one or more frame boundaries 72-n were received using synchronization bits 74 and generates a system pulse train 92 having pulses 94-n, wherein pulses 94-n corresponds to frame boundaries 72-n or another reference point in frames 70-n. Similarly, upon receiving GPS signal 63-k, DTC unit 66 derives a GPS time $t_{GPS\text{-}derived}$ and generates GPS pulse train 80 using the derived GPS time $t_{GPS\text{-}derived}$ and its oscillator. Based on GPS pulse train 80 and system pulse train 92, DTC unit 66 determines a calibration time Δt using its oscillator, which is the time difference between a reference GPS pulse (or time) 82 and a reference system pulse 94-n.[6]

Upon determining the calibration time Δt, DTC unit 66 subsequently transmits the calibration time Δt and a reference frame identifier to base station 62, wherein the reference frame identifier specifies a frame boundary 72-n (or frame 70-n) corresponding to the reference system pulse 94-n.[7]

Generating GPS pulse train 80 can be facilitated if GPS signal 63-k can be acquired or detected faster by DTC unit 66. In one embodiment,

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[5] Page 7, lines 26-31.
[6] Page 8, lines 7-15.
[7] Page 8, lines 19-22.

base station signal 90 includes a request for timing calibration and

information indicating GPS satellites 64-k which are in view of base station

62 and/or DTC unit 66 and associated Doppler frequencies $f_k(r)$. In

another embodiment, base station signal 90 includes the request for timing

calibration and aiding information (such as that provided by WAG server 68

to WAG client 69 via base station 62) with a maximum holding time ΔT for

indicating when such aiding information expires.[8]

Fig. 11 is a flowchart 100 illustrating one possible geographical

location process using WAG system 60 in accordance with the present

invention. In step 102, DTC unit 66 performs timing calibration, i.e.,

determine calibration time Δt, for a particular base station 62. In step 106,

DTC unit 66 provides WAG server 68 via base station 62 with the

calibration time Δt with respect to the nth frame boundary. In step 108,

WAG server 68 provides the following to base station 62 for each detected

satellite: the calibration time Δt with respect to the nth frame boundary, an

estimated frequency $f_k(r)$ at a reference point within a sector in which WAG

client 69 is currently located; a code phase search range $R_k(sect)$ that

includes all possible code phases for GPS signal 63-k arriving anywhere

within the sector or an area smaller than the size of the sector where WAG

client 69 is currently located; and a GPS reference time t_k indicating a time

duration or search window wherein the estimated frequency $f_k(r)$ and code

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[8] Page 8, lines 27-33.

phase search range $R_k(sect)$ are valid. In step 110, base station 62

transmits an enhanced search message to WAG client 69, wherein the

enhanced search message is transmitted over a series of frames 70. The

enhanced search message includes the estimated frequencies $f_k(r)$, the code

phase search ranges $R_k(sect)$, the GPS reference times t_k, the calibration

time Δt and delay information.[9]

In step 112, WAG client 69 receives the enhanced search message,

time stamps when the enhance search message was received using the

synchronization bits and its internal clock, and synchronizes its internal

clock using the calibration time Δt and delay information included in the

enhanced search message.[10]

In step 114, WAG client 69 begins to search for the GPS signals

indicated in the enhanced search message using the derived GPS timing.

For example, DTC unit 66 searches for GPS satellite 63-k by searching,

within a search window indicated by GPS time t_k, for the associated PRN

code PN-k using estimated frequency $f_k(r)$ and the code phase search range

$R_k(sect)$. In step 116, WAG client 69 detects and processes the detected

GPS signals 63-k. In step 118, WAG client derives a GPS time $t_{GPS\text{-}derived}$

upon processing the detected GPS signals and compares the GPS time $t_{GPS\text{-}derived}$

to frame boundaries in signals transmitted by base station 62 to

determine a second calibration time $\Delta t'$, wherein the calibration time $\Delta t'$

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[9] Page 9, lines 6-26.
[10] Page 9, lines 31-34.

may or may not take into account one way propagation delays between

WAG client 69 and base station 62. In step 122, if another request for time

calibration is requested (for another or same WAG client 69), the second

calibration time $\Delta t'$ may be used. Subsequently, another calibration time

$\Delta t''$ is determined by the WAG client 69 receiving the second calibration

time and transmitted back to base station 62.[11]

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL:

Appellants seek the Board's review of the rejection of claims 1, 2 and

4-5 under 35 U.S.C. § 103 as being unpatentable over Malcolm

(USP5,790,939) in view of Huston (USP 6,266,008); the rejection of claim 3

under 35 U.S.C. § 103 as being unpatentable over Malcolm in view Huston

and further in view of Noguchi (USP 4,607,257); and the rejection of claim

10 under 35 U.S.C. § 103 as being unpatentable over Malcolm in view

Huston and further in view of Abraham (USP 5,510,797).

Claims 1, 3-5 and 8 will be argued as one group rising and falling

with independent claims 1, and claims 2 and 10 will be argued as a

separate group rising and falling with independent claim 2.

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[11] Page 10, line 22-Page 11, line 2.

VII. ARGUMENTS:

A. Claims 1, 2 and 4-5 remain finally rejected under 35 U.S.C. § 103 as being unpatentable over Malcolm (USP5,790,939) in view of Huston (USP 6,266,008).

i. Claim 1

The Examiner has correctly noted that Malcolm fails to disclose or suggest "either receiving aiding information associated with at least one satellite signal and holding information for indicating when the aiding information expires; or transmitting a time for indicating a time duration wherein an estimated frequency or code phase search range is valid," as recited in claim 1.[12] The Examiner, however, contends that Huston teaches the above-quoted limitation and that one skilled in the art would have found it obvious to have combined the teachings of Huston with Malcolm.

Specifically, the Examiner alleges that "Huston provides evidence of receiving aiding information (i.e., timing signals from a certain repeater) associated with at least one satellite signal and holding information (i.e., inherently included in repeater unique identification) for indicating when the aiding information expires (i.e., allocated time window) (col. 6, lines 20-35 and 46-60)."

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[12] See Page 3 of the April 21, 2004 Final Office Action.

Appellants submit that the Examiner has failed to establish a prima facie case of obviousness. It has long been settled that inherency is not obviousness, that which may be inherent is not necessarily known, and obviousness can not be predicated on what is unknown.[13] As such, the Examiner reliance on inherency appears insufficient to establish a prima facie case of obviousness.

Huston discloses a system shown in Fig. 6 that includes remote units 10, each having a GPS repeater 60. The portion of Huston relied upon by the Examiner teaches using GPS timing to synchronize the repeaters 60 and allocate a transmit window to each remote unit 10. Each repeater 60 is described as having a unique identification which is transmitted along with position data. Each repeater is allocated a 5 second transmit time window to transmit its data. A repeater 60 receives timing signals from four satellites and transmits this timing information along with an identification of the satellite as the position data.[14] A base station 12 in the Huston system receives the timing signals from the repeaters 60 during their assigned window, and applies timing correction thereto.[15]

The Examiner contends that the timing signals sent by the repeaters are aiding information as recited in claim 1 and that the unique identifier of a repeater somehow inherently provides holding information for indicating

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[13] See In re Diamond et al., 360 F.2d 214, 149 USPQ 562 (CCPA 1966); and In re Spormann, 363 F.2d 444,150 USPQ 449 (CCPA 1966).
[14] See col. 6, lines 20-35.
[15] See col. 6, lines 46-60.

when aiding information expires.[16] The Examiner further clarifies this

position by stating:

> Since the base station keeps only a current correction for the limited
> number of satellites in view, Examiner asserts that inherently this
> teaching is analogous to the indication that aiding information
> expires (i.e., is not current) (see col. 6, lines 45-60). Thus the time
> windows inherently incorporate such "holding information" such that
> only current data is used (i.e., not expired).

See Page 1 of the April 21, 2004 Final Office Action

The statements by the Examiner make clear that Huston does not teach the

holding information as claimed. As the Examiner points out, Huston

teaches assigning time windows to the repeaters. As such the base station

knows when the new position data (i.e., timing signals) will be transmitted

by a given repeater. As such, a repeater does not need to send information

to indicate that this timing information is not longer current.

Also, inherency requires that something must occur not that

something is analogous. Again, the Examiner's inherency foundation

appears misplaced, and can not serve to establish a prima facie case of

obviousness.

Furthermore, just because aiding information may not be current

does not necessarily mean that it has expired. Appellants fail to see where

the claim recites that the word "expires" means "not current." Accordingly,

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[16] See Pages 3-4 of the April 21, 2004 Final Office Action.

the Examiner's reasoning is doubly faulty, because the timing information

in Huston no longer being current can not by definition be equated to

expired timing information. Either way, no holding information is received

by the base station inherently or otherwise.

Because Malcolm and Huston both fail to disclosure or suggest

"either receiving aiding information associated with at least one satellite

signal and holding information for indicating when the aiding information

expires; or transmitting a time for indicating a time duration wherein an

estimated frequency or code phase search range is valid," as recited in

claim 1, Malcolm in view of Huston can not render claim 1 obvious to one

skilled in the art.

Appellants also submit that the Examiner has failed to provide proper

motivation for combining the teachings of Huston with Malcolm. Huston

pertains to a system having a plurality of remote units that communicate

with a base station in given time windows. Appellants fail to see the

applicability of such a system to the GPS synchronizing system of Malcolm.

Malcolm does not include repeaters as in Huston, and Malcolm has no need

nor would Malcolm benefit from application of repeater timing signals.

Appellants simply do not understand how the Examiner is proposing to

incorporate the teachings of Huston into Malcolm to obtain some benefit.

Instead, it appears that the Examiner has fallen victim to the hindsight

syndrome and combined teachings from references for the sole purpose of

reconstructing the claimed invention. As such, Appellants assert that the

Examiner has failed to establish a prima facie case of obviousness.

ii Claims 3-5 and 8

Claims 3-5 and 8, dependent on claim 1, are patentable for the

reasons stated above with respect to claim 1 as well as on their own merits.

iii Claim 2

The Examiner agrees that Malcolm fails to disclose or suggest

"determining a second calibration time at the receiver using a detected

satellite signal; and transmitting the second calibration time," as recited in

claim 2.[17] The Examiner, however, contends that Huston teaches the

above-quoted limitation and that one skilled in the art would have found it

obvious to have combined the teachings of Huston with Malcolm.

Specifically, the Examiner alleges that:

Huston further discloses determining a second calibration time (i.e., reads on that received from a certain repeater) at the receiver using a detected satellite signal (e.g., GPS signals) (col. 6, lines 46-57); and transmitting (i.e., reads on base station applying the correction upon receipt of the repeater timing signal) the second calibration time (col. 6, lines 48-57).

Page 5 of the April 21, 2004 Final Office Action

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[17] See Page 4 of the April 21, 2004 Final Office Action.

Appellants do not understand the Examiner's position. Claim 2 recites that a receiver receives a calibration time, determines a second calibration time and transmits the second calibration time. The repeaters 60 in Huston send the base station 12 timing signals. The base station 12 determines and applies the timing correction. Neither the repeaters 60 nor the base station 12 both (1) receive a calibration time, and (2) determine and transmit a second calibration time.

Contrary to the Examiner's position, receiving a calibration time is not the same as determining a calibration time. Besides, timing signals – not a calibration time, are received from the repeaters 60 in Huston. Further, contrary to the Examiner's position, transmitting a second calibration time is not that same as applying a correction to a repeater timing signal.

Because Malcolm and Huston both fail to disclosure or suggest " determining a second calibration time at the receiver using a detected satellite signal; and transmitting the second calibration time," as recited in claim 2, Malcolm in view of Huston can not render claim 2 obvious to one skilled in the art.

Appellants also submit for the reasons stated above with respect to claim 1 that the Examiner has failed to provide proper motivation for combining the teachings of Huston with Malcolm.

iv Claim 10

Claim 10, dependent on claim 2, is patentable for the reasons stated above with respect to claim 2 as well as on its own merits.

VIII. <u>CONCLUSION:</u>

Appellants respectfully request the Board to reverse the Examiner's anticipation rejection of claims 1-5, 8 and 10.

Pursuant to 37 C.F.R. 1.17 and 1.136(a), the Appellants respectfully petition for a 2 month extension of time for filing a response in connection with the present application, and the required fee of $950.00 is attached.

The Commissioner is authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.
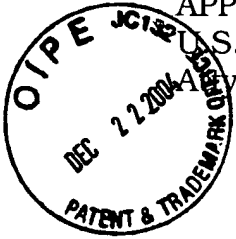
Respectfully submitted,

HARNESS, DICKEY, & PIERCE, P.L.C.

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CLAIMS APPENDIX

Claims 1-5, 8 and 10 on Appeal:

1. A method of time calibration comprising the steps of:

determining a calibration time using system timing information and embedded satellite timing information;

transmitting to a base station the calibration time and a reference frame identifier, wherein the reference frame identifier specifies a frame boundary of a reference system pulse corresponding to the system timing information used in the determination of the calibration time; and

either receiving aiding information associated with at least one satellite signal and holding information for indicating when the aiding information expires; or transmitting a time for indicating a time duration wherein an estimated frequency or code phase search range is valid.

2. A method of time calibration comprising the steps of:

receiving at a receiver a message at a base station having a calibration time and a reference frame identifier, wherein the message is received over one or more frames, the reference frame identifier specifying a frame boundary of a reference system pulse, the calibration time being determined using satellite timing information and the reference system pulse; and

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synchronizing the receiver to satellite timing using the calibration ·

time, the reference frame identifier and a reference point in a frame

specified by the reference frame identifier; and

determining a second calibration time at the receiver using a detected

satellite signal; and

transmitting the second calibration time.

3. The method of claim 1 comprising the additional step of:

receiving a request to perform timing calibration prior to the step of

determining the calibration time.

4. The method of claim 1, wherein the step of determining the

calibration time comprises the steps of:

detecting at least one satellite signal; and

determining the embedded satellite timing using the detected at least

one satellite signal.

5. The method of claim 4 comprising the additional step of:

receiving Doppler frequency information associated with the at least

one satellite signal being detected prior to the step of detecting the at least

one satellite signal.

8. The method of claim 1 comprising the additional step of:

transmitting an estimated frequency or a code phase search range.

10. The method of claim 2, wherein the step of receiving at the receiver the message having the calibration time and the reference frame identifier comprises the step of:

time stamping the message to indicate a time at which the message was received by the receiver.